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CALIFORNIA JOURNAL OF ELEMENTARY EDUCATION

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THE CURRICULUM AND LIFE TODAY

I. KEITH TYLER, *Assistant Director, Department of Research and Curriculum, Oakland, California*

The present critical situation in American social and economic life is being increasingly felt by the public schools. While hysterical demands for economy are resulting in many cases in blind crippling of educational services, in others there have resulted sober attempts to make adjustments according to a well-considered philosophy of education. School people are being forced to re-think the purposes and aims of public education and to conserve those elements in the school organization and curriculum which give most promise of achieving these goals. The form in which economy is to be exercised in these times must be determined by a clear grasp of the purposes and means of education. Blind submission to the force of public opinion cannot be trusted to result in a sane economy.

School subjects must be evaluated carefully by the criteria set up under the guidance of such a philosophy. There must be no hesitancy in eliminating those subjects which fail to demonstrate their worth, provided, of course, that the community has been properly informed of the reasons behind such an action, and its cooperation secured.

In the elementary school, however, it is likely that change will not be so much in the direction of the elimination of subjects as toward a new selection of materials within subjects. New demands are placed upon the schools as a direct result of the present situation. A new emphasis is demanding recognition. The cry of the present need is overshadowing the traditional call of the past. The materials and activities of the school must be made functional in the lives of boys and girls. Children must be prepared to face life today and the problems of an uncertain tomorrow. All that is included in the course of study must meet the test: does it relate to life today?

The school has been passing through a period of vital and interesting change. The old school, traditionally minded, had an imposed curriculum which has been aptly described as *subject-matter-set-out-to-be-learned*. It was rigid, formal, and prescribed; though artist teachers, even in that day, managed to breathe life into its dusty members.

But there came the shift of emphasis to the child. Beginning with John Dewey and the Laboratory School at the University of Chicago, the movement through three decades has been remaking the practices of the classroom. Projects, activities, and units of work, have become the catchwords of the new education. Child study and

teacher experimentation have revealed much about the interests and activities of children. Boys and girls are not forced to conform to a rigid school program; the school-program school is being adjusted to children. Education is becoming a happy process; boys and girls like to go to school.

But while the center of the school has shifted to the child and practice has been modified to meet his interests and needs, only too often has this been merely a change in teaching methods. The curriculum remains much as it was. It has been assumed that the child lived in a world all its own with little relationship to the work-a-day life of adults. Into this world were fitted the traditional materials of the curriculum. Only too largely can it be said, as John Dewey wrote in 1922:

If the average boy or girl could be walled off from all ideas and information about social affairs save those acquired in school, they would enter upon the responsibilities of social membership in complete ignorance that there are any social problems, any political evils, any industrial defects. They would go forth with a supreme confidence that the way lies open to all, and that the sole cause of failure in business, family life, or citizenship lies in some personal deficiency in character.

The effect is to send students out into actual life in a condition of acquired and artificial innocence¹.

Contemporary life must have a larger share in the curriculum. Its stresses and strains, as well as its benefits in material comforts must be intelligently presented to the boys and girls in the schools if education is to live up to its avowed purpose as "life itself."

The reaction against strict subject matter requirements is to be highly commended. The freedom, the initiative, the creative ability, and, yes, even the skills which are promoted under the freer conditions of the modern school are most necessary. But the process must be carried a step further. The question presents itself: a child-centered school for what? Are skills and creative abilities of individual significance only? Or must the school more closely relate itself—its methods, its curriculum materials, its purposes—to the society in which it exists? Certainly the child himself does not live in a social vacuity; he is a member of society and lives, as do his elders, in a civilization which is showing signs of severe strain. The child is affected by the present wide-spread unemployment; it may be through his own father or it may be a neighbor—willy-nilly he comes into contact with it daily. The child meets with crime through the newspaper, the movies, or through some actual infraction of the law in his immediate community. The child has exposed to him great quantities of cheap literature. He attends motion pictures which are tawdry and unwholesome.

¹John Dewey, "Education as Politics," *New Republic*, October 4, 1922. Vol. 32, p. 140.

Hardly a question which confronts the world today but has its implications for the children in the classroom. Yet school people have gone blithely on their way talking about the child as though he were living in a world all his own, untouched by the struggles which go on in the world at large. It is impossible to develop a model child having good traits in the abstract. Like the early critics of Victorianism, we demand not only that the child be good, but that he be "good for something." Instead of speaking of the child as the center it would be better, rather, to *center upon the child in society*.

And what of that much-debated question, Shall controversial issues be discussed in the schools? There can be but one answer and that is a decided affirmative. Aside from the basic skills of reading, writing, and arithmetic, there is nothing quite so important as acquainting the child with the problems which face mankind in its struggle for a better world. Where else may he turn for an objective presentation of mooted questions? Since the school is supported by the state for the development of that citizenship which will promote the best interests of the state, it becomes the duty of the educator not to shirk this responsibility, dangerous though it may be.

Much of the danger, however, lies not so much in the fact of what is presented as in the manner in which it is treated in the classroom. Only too often have teachers attempted to transplant in the boys and girls the prejudices and bigotries of their own upbringing. Small wonder that parents and patrons descend in wrath upon the school authorities demanding an end to such teaching.

But a saner treatment is possible; a treatment which not only makes less likely the hostility of the community, but one which leaves boys and girls more freedom in formulating their own tentative solutions. After all, teachers are not always right. It may often be that the point of view which this age hold to be correct will in time be proved in error.

First of all the situation must be presented honestly. No more half-truths; no more covering up of the unpleasant. Rather must the whole situation with its sordidness and its idealism, its success and its failure, its good points and its bad, be brought before the boys and girls. Only thus by being in possession of all relevant obtainable facts will they be able to gather the full implications intelligently.

Second, there must be pointed out the problems which are involved in these situations. In a unit of work on Cotton, children must not only learn about life in the South in relation to cotton; not only about the problems which the cotton-gin brought in its wake; not only about the Civil War; not only about the growth and uses of cotton; they must also see and feel some of the problems

which are involved in the raising of cotton today. Even on a sixth-grade level it is possible for boys and girls to understand the problem of over-production and low prices—at least as well as the average cotton-raiser seems to understand it these days. They can sense the problems involved in the increasing uses of silk and of synthetic products.

Third, there must be presented as objectively as possible the various solutions which have been suggested, and the boys and girls must be helped to work out some of the implications which are involved in each of the proposed solutions. It is not the place of the teacher to indicate either directly or by an unconscious display of feeling which one of the solutions he holds to be most desirable. It is, however, the place of the school to point out all the possibilities so that boys and girls may tentatively make up their minds upon the problem.

Fourth, training in the techniques of problem solution must be given. Children must have practice in solving with satisfaction the social problems which surround them. Reflective thinking, and the techniques of the scientific method must be learned and become habitual as the means by which problems are solved.

And fifth, and perhaps most important, there must be developed in boys and girls the desire to solve their problems. We do not want to produce enlightened cynicism; rather do we want realistic idealism. There must be painted in broad outline a vision of a reconstructed social order which will stir the pulses and impel action, to ensure that something will be done to bring into being this envisioned society.

Only by such a direct facing of the realities of today's living, can the school hope to become functional, in any significant way, in the lives of the boys and girls with which it deals. The elementary school must conceive of its task of making children intelligent regarding contemporary life as of equal importance with equipping them with the rudimentary tools of living. Social studies must not be an escape into pleasant description of the far away and the past—it must be a vital grappling with the present and the near. Historical and geographical background there must be—but such materials must be chosen because of their vital significance in interpreting contemporary life. Let us *center upon the child in society*.

WHAT HAS SUPERVISION TO OFFER TOWARD THE DEFINITE IMPROVEMENT OF PUBLIC SCHOOL INSTRUCTION?

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What has supervision contributed to the development of effective growth of teachers in service and of efficient learning on the part of children in our public schools? We can theorize in arriving at answers to this question; we can draw from our own experiences; or we can seek scientific evidence. The first approach produces answers based upon introspection; the second method furnishes impressions resulting from professional activity; the third procedure results in conclusions based upon scientific investigation. Although we can feel assured that there will be marked agreement in the answers derived by the use of the various methods, the utilization of research techniques will result in the valid and reliable derivation of facts.

With this consideration in mind, let us seek our answers to the question by reviewing the formidable array of scientific studies in this field which have been made in recent years. The conclusions stated in this paper have been derived by integrating the significant findings of the many experiments in the evaluation of supervision which have been completed very largely since 1920. All of these research studies except the very recent one by Deck (11)¹ have been summarized in chapter five of the *Fourth Yearbook of the Department of Supervisors and Directors of Instruction*, published two years ago. Anyone who may wish to see the nature of the scientific methods used by the investigators will find them discussed critically in four chapters of that yearbook. A brief summary of the findings based upon research, quite similar to the present paper, was read by the writer at the meeting of the Department of Supervisors and Directors of Instruction held in February, 1931.²

GENERAL CONCLUSIONS DERIVED FROM THE RESEARCH STUDIES

Long before any one has completed his reading of the 74 research studies, experimental and otherwise, he will reach four general conclusions. The findings from every reported experiment and many other types of investigation may be summarized in the first general

¹Numbers in parentheses refer to the numbered studies listed in the bibliography at the conclusion of this article.

²George C. Kyte, "Conclusions Derived from Experimental Studies on the Value of Supervision," *Educational Method*, Vol. X; April, 1931; pp. 403-407.

conclusion. *Supervision contributes significantly to the improvement of teaching and the facilitation of learning.* The formidable array of data which support this conclusion has become so extensive that there is little justification for further research planned solely to demonstrate the value of supervision. This material proves irrefutably that supervision of teachers has led to increase in their teaching skill no matter how good they were supposed to be before supervision was introduced. The most gratifying evidence of their growth has been found in the measured improvement in learning by the children in their classrooms. From now on, therefore, we should experiment to determine chiefly how to make supervision more effective. The recent types of experiments in the appraisal of supervision are in keeping with the trend which should be followed.

When studies are grouped according to the types of school officers actively engaged as supervisory agents during the course of the researches, the second generalization becomes evident. *Each type of supervisory officer employed in school systems can contribute efficiently to the improvement of teaching and of learning through his supervisory activities.* Experimental evidence and other research data indicate that city school superintendents, county school superintendents, general supervisors in city schools and in rural schools, special supervisors, elementary school principals, and secondary school principals hold positions which may be made sources of direct and indirect influences on pupil learning. If we could succeed in getting our laymen to study the experimentally derived evidence supporting this conclusion, they would oppose more vigorously every effort that is being made to deny their children the benefits which accrue to them through the supervisory work of these school officers.

From the experimental studies, especially, the third general conclusion is derived. *Careful planning, organizing, and carrying on of supervisory activities are essential to the efficient attainment of the desired goals of supervision.* Although such a conclusion may seem trite at first thought, the research literature shows very clearly that the point needs stressing in order that we may keep it in mind while at work as supervisory officers. The more specific conclusions presented later in this paper serve to indicate, also, the need for reminding ourselves constantly to act in keeping with the generalization.

The fourth general conclusion clearly supports a contention which many of our educational leaders have uttered frequently. *Appraisal of supervision is a vital, scientific procedure which must find a regular place in the work of every supervisory officer.* The literature on the evaluation of supervision contains data indicating such marked influences of supervisory activities on children that we

must be careful of the effects we produce. Our obligation to direct our energies in supervision to the end that children are the gainers thereby is sufficient justification for raising to prominence this fourth conclusion.

GENERAL CONCLUSIONS DERIVED FROM THE EXPERIMENTAL STUDIES

Turning our attention from the entire group of research studies dealing with the evaluation of supervision to the 29 investigations involving experimentation, we discover many other conclusions which are sustained by the data in these researches. At least two of the conclusions are based on findings from so many of the experimental studies that they may be classified as generalizations. The first one has to do with the use of scientifically constructed measuring instruments as a means of aiding in the improvement in learning. *Supervisory activities in which careful planning and constructive use of a testing program are included result in marked improvement of pupils' achievement.*

The second conclusion sounds like a corollary of the one just stated but it is in reality derived from the various experiments. *Improvement in pupils' achievement occurs in every subject which is given sound supervisory attention.* Experimenters have given the greatest attention to the values accruing from supervision of the "Three R's," as we would expect. Sufficient data abound, however, regarding evaluation of supervision of the social studies (2, 5, 7, 18) health education (5, 16), fine arts (18), and elementary phases of vocational subjects (5, 16) to conclude that supervision materially aids in the improvement of learning in these subjects.

SPECIFIC CONCLUSIONS REGARDING GROWTH OF PUPILS

In addition to the six general conclusions regarding the value of supervision, there are various specific ones which are readily drawn from data obtained from one experimental study or more. The first group of these particular conclusions consists of three related to the growth of children. Although the first one would seem to be a logical deduction growing out of the last general conclusion presented, it is based directly on the results noted in seven experiments. *The progress of pupils through the grades is improved by means of constructive supervision* (2, 6, 8, 11, 16, 18, 19). The accumulated data show clearly that mentally superior children (2, 8, 16, 18, 19) and subnormal children (2, 6, 11, 16, 18) as well as normal children (6, 17, 18) benefit from the supervisors' activities.

The attitudes of children toward school are wholesomely influenced by the modifications in learning activities resulting because of supervision. Data gathered in connection with seven experiments indicate that, in the schools where supervision operated, there is improvement in the attitudes of children toward their school work (5, 6, 16, 18, 19, 28) especially in desire to achieve, in improved application, and similar attitudes toward learning. Conduct in school becomes more exemplary (5), and attendance more regular (5, 10). In the rural schools and in the urban schools located in laboring communities, much larger percentages of children continue in school after supervision is introduced than remain before it occurs (5, 16, 10). Inevitably these better conditions contribute toward more effective learning by the pupils.

Supervision materially influences the out of school life of children (5, 18, 24). There is evidence in three investigations which indicate that children use their leisure more efficiently in such activities as reading, studying music, and engaging in home and farm projects. The pupils in supervised schools exercise better health habits, avoid illness, and participate more extensively in wholesome community activities.

SPECIFIC CONCLUSIONS REGARDING GROWTH OF TEACHERS

The findings in the experiments, with respect to the growth of teachers, may be summarized in two specific conclusions. *Supervision definitely influences the professional growth of teachers.* This conclusion is generally implied from the improved achievements of children who learn under supervised teachers. It is conspicuously supported by the reactions of these teachers reported in questionnaire studies. The experimental literature contains findings, however, which further confirm the conclusion. One investigator demonstrates clearly the influence of the supervisory staff in modifying the educational philosophy of the teaching staff (12). In four other experiments, definite traces of similar influences can be seen (3, 5, 17, 18). Five of the studies show that teachers also increase the amount of their professional study under the influence of supervision (5, 8, 18, 20, 24). In fact, their attitude toward professional growth, as a result of supervisory help, becomes a distinctly more professional one (2, 5, 8, 10, 12, 15, 18, 20, 28).

From many of the details presented up to this point, we can derive the next conclusion. *Significant improvements in teaching occur because of the direct influence of supervisory activities.* In more than half of the 29 experiments, data are presented and interpreted as supporting this conclusion. Some of the evidence is quite specific

and very conclusive. The total amount is more than sufficient to demonstrate the value of supervision in this respect.

SPECIFIC CONCLUSIONS REGARDING VALUABLE INFLUENCE OF SUPERVISION ON COMMUNITY LIFE

One of the conclusions already presented contains the implication that supervision commendably influences the wholesome development of community life. There is additional evidence which makes possible the derivation of two more specific conclusions. *Supervisory officers directly and indirectly influence the attitude of laymen to the point of providing better educational facilities and more schooling needed for their children (5, 6, 16, 18, 20, 24, 28).* Attendance at school meetings attracts a larger per cent of the adult population. A greater number of parents exhibit interest by visiting their community's school. Evidence of better cooperation between home and school is noted. School plants are extensively improved; considerably more equipment, supplies, and reading materials are furnished.

The findings in one experiment, primarily, furnish the second significant conclusion regarding the valuable influence of supervision on community life. *Through the influence of a supervisor's activities, adults in his school district improve their own living conditions (5).* The data presented in the report include increases in the per cents of rural families taking newspapers, subscribing for magazines, providing home libraries, screening doors and windows, beautifying home surroundings, adding ordinary labor-saving conveniences, and purchasing musical instruments.

SPECIFIC CONCLUSIONS REGARDING THE TECHNIQUES OF SUPERVISION

In spite of the amount of experimentation with respect to the value of supervision, very few of the researches establish definite findings regarding specific supervisory programs, techniques, and the like. Instead of many much needed conclusions of this nature there are only four which can be derived from the available data.

Two studies contain convincing evidence which support a commonly held belief. *The more direct the supervisory help becomes the greater is the improvement effected (7, 26).* The experimenters show conclusively that supervision by classes and supervision by schools are more effective procedures than inspection. The studies also indicate that better achievement of pupils occurs in inspected schools than in unsupervised schools, weak as the influence of inspection may be.

One research worker provides us with a conclusion regarding the relative merits of two types of supervisory techniques. *The individual supervisory conference is somewhat more effective than the supervisory teachers' meeting* (14). The conclusion is based upon an experiment in which an endeavor was made to render constant all other factors except the supervisory techniques used in equivalent experimental situations.

The findings in this study also markedly support those of another research study from which the next conclusion is directly derived. *Each carefully planned individual supervisory conference produces demonstrable effects on classroom procedure* (17). This specific finding has been obtained in a statistical study of ten pairs of randomly selected stenographic records made of lessons taught in elementary school classrooms. The lesson taught not long after a supervisory conference has been held with a teacher is superior to a previous lesson taught by her and which forms the basis of the supervisory conference. The specific changes in the second lesson, when compared with the first, are found to correspond with the items discussed in the supervisory conference occurring between these lessons.

An unpublished investigation contains a wealth of evidence from which is drawn as important a specific conclusion as we may expect to derive from this particular field of investigation. *The educational philosophy of a supervisory staff significantly affects the nature of teaching and the nature of pupil learning and achievement* (11). This conclusion is implied in the evidence to be found in seven other research studies (3, 5, 6, 15, 16, 17, 18). The investigator, who has definitely established the conclusion through an intensive study of conditions in three school systems, has given us considerable food for thought. We are compelled to consider the fact that supervisory officers can do great good to children corresponding to the extent that the supervisory activities are based upon educationally sound purposes. All other conclusions assume new significance in the light of this one. They become more important, also, from the standpoint of the enormous amount of good derived from supervision wisely conducted.

In closing, the writer is led to two generalizations. The first is a three-fold conclusion which summarizes most of the others. *Supervisory planning must be done soundly and carefully; supervisory procedure must be carried on wisely and thoughtfully; and supervisory activity must be submitted to intensive, scientific appraisal regularly and frequently.* This general conclusion and the others upon which it is based should be observed conscientiously by supervisory officers in order to safeguard the rights of children. The second generalization is an obvious one resting upon the scientific evidence in the

series of research studies. *Supervision is a vital, essential activity which must be kept in the program of public education if the need for continuous improvement of learning on the part of children is to be facilitated.*

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THE SPECIAL SUPERVISOR'S CONTRIBUTION TO THE NEW EDUCATION

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The Eighth Yearbook of the Department of Superintendence of the National Education Association makes this statement concerning supervision in its opening paragraph: "Supervision is a creative enterprise. It has for its object the development of a group of professional workers who attack their problems scientifically, free from the control of tradition and actuated by the spirit of inquiry. Supervision seeks to provide an environment in which men and women of high professional ideals may live a vigorous, intelligent, creative life." There is abundant opportunity for the supervisors of special subjects to be creative in the relation of their special fields to the new educational program. The practice of integration is still very new. Its development will consequently require originality, initiative, persistence, and the scientific point of view.

POSITION AND ACHIEVEMENT OF THE SPECIAL FIELDS

The nature of the educational work in the special fields of music, art, industrial arts, household arts, and physical education is largely manipulative with closely related technical knowledge. The results of teaching in these fields is readily observable and measurable with satisfactory reliability. When a music teacher develops an orchestra or chorus, even those who are not technically trained are immediately appreciative of the results. The development of athletic teams, the production of pieces of furniture, and the creation of food dishes are likewise quickly appreciated by the layman.

Teachers and supervisors in the special fields have been highly successful in their teaching results. The techniques developed by elementary, junior, and senior high school students are amazing to other school people and to parents. We are all proud of these concrete evidences of the effectiveness of the educational program. The urge to attain a high degree of pupil skill by the teachers and supervisors in the special fields is natural and highly desirable. This interest, however, may easily lead to a disregard for the relation of the special field with other elements of the educational process. To obtain a high degree of manipulative skill requires persistent, intensive, and attentive drill. In an overcrowded school program there is almost sure to arise a competition for the pupils' time in order to secure desired results.

In order to cooperate more fully in the new educational program, it may be necessary for the special fields to sacrifice something of their cherished ambition for finished results in order that these interesting and motivating fields may contribute more largely to the complete educational process.

THE NEW EDUCATION DEFINED

The new education seeks the development of the individual in knowledge, skills, and emotional controls for successful living in a complex, changing, social order. Successful living secures a maximum of self-preservation, self-realization, self-expression, and self-extension consistent with the social good. It involves the realization of consumer values in satisfying the primary wants of life, as well as the values which are provided in a wider experience made possible in the present age; but it also includes the realization of productive values through personal constructive and creative activities. Contribution to the social order is no less a part of successful living than the consumption of its goods and services.

Pupil development in successful living is best nurtured, stimulated and guided, in a controlled environment which approximates the complex situations in life. In order that the pupil may develop through the reactions of experience, life situations are unified rather than classified. The new education seeks to present a series of related, unified experiences which involve facts, skills, problems, interests, attitudes, inhibitions, satisfactions, social relations, and social customs.

The special fields are increasingly important in our changing social life. The improvement of industrial processes makes possible a larger proportion of leisure and a larger demand for cultural values. The fine arts, as well as the industrial arts, are of great importance in the interpretation of twentieth century life and adjustment to it. The large field of knowledge and the high degree of skill involved in the special fields are an important part of the problem in building this series of controlled experiences. There is no doubt but that the supervisor of special subjects has much to contribute in the development of the new education.

OPPORTUNITIES OF THE SPECIAL SUPERVISOR

One who is not closely informed concerning the work of the special fields is unable to make detailed application of the special opportunities in these fields. It will be necessary, therefore, to confine this discussion to general principles which may apply to all of the fields. A series of nine general activities are here presented with the hope that each worker in a special field may see the application to his own work.

1. Assisting the Teachers to Understand the Possibilities of the Special Fields. The development of an integrated educational program requires that one person understand and coordinate the various subject fields. It is probable that in the primary school the work of any one group of children will be directed largely by a single teacher. This teacher will not be a specialist in all fields. In initiating a unit of work concerning life on the Nile, she would need help in discovering the possibilities of music, art, and construction activities to the general program. If the special supervisors were to inquire concerning the projects contemplated and would search their materials for related themes and source materials, it would be of great assistance to the teachers in their curriculum planning.

2. Assisting the Teacher in Selecting and Securing Materials and Supplies to be Used. The present tendency toward economy in school expenditures makes it especially important that we use all available sources for materials and supplies as completely as possible. The supervisors are familiar with the materials available and will contribute greatly by indicating the possibilities of adapting common materials which may easily be secured by the teacher or pupils for the development of the general unit of work.

3. Cooperation in the Construction of Units of Work. The reorganization of curriculum materials to meet the new educational demands is an arduous and time-consuming task. The supervisors, through a continuing study of the possible contribution of their special field to these general activities, accumulate a fund of material which will be of great value to the teachers in planning their units of work. This would not only be a great saving of time to the teacher, but would be a source of stimulation which would indicate the possibilities along other lines.

4. The Discovery of Possibilities for the Initiation of Desirable Units from the Regular Work of the Special Field. There are many cases in which the musical presentation, the industrial arts exhibit, or the physical education program may itself become the center of a unit of work and relate to it social science, English, mathematics, writing, and spelling. A careful inspection of the courses of study in the special fields would make possible a listing of the elements which lend themselves to the development of units of work.

5. The Development of Teaching Methods in the Presentation of the Materials in the Special Fields. Supervisors are specialists not only in materials but also in methods. Suggestions concerning how the art work may best be presented, or the physical education work conducted in relation to the unit of work, will assist in maintaining the high standards of pupil accomplishment in the special fields as well as intensifying the interest in the entire project.

6. *The Development of a Closer Cooperation Between Subject Fields Through Inter-departmental Conferences.* It has been the usual practice to develop the courses of study in each of the special fields by those who are engaged solely in the work of those fields. Inter-departmental conferences should show the possibilities for integration and correlation of the different fields. What does music contribute to physical education? and what does art contribute to music? and how may both contribute to character education and citizenship building? are typical subjects for study at such conferences.

7. *The Transfer of Successful Experiences from One School to Another.* One special privilege which the supervisor has is that of going from school to school to observe the variety of superior work which is being conducted. The special supervisor makes possible the transfer of the best from every school situation to every other school situation. This may be accomplished by the development of bulletins, inter-school visitations, and personal suggestions.

8. *Present Demonstrations and Exhibits which Illustrate their Field as Part of an Integrated Program.* We all learn best through observation. It is much more effective to see the actual program and make the application than to develop it as a result of some description. If these demonstrations and exhibits were centered around the concept of an integrated program, they would be an important stimulus.

9. *Preparation of Criteria for the Evaluation of the Work.* Old standards of pupil accomplishment in the special fields will need to be modified before they may be applied to achievement under the general unit of work program. The preparation of satisfactory standards of achievement is an important aid in the improvement of educational results. The evaluation of teaching is the first step in its improvement, and it is also the final step in the teaching process.

These activities are not new. They are what supervisors are already doing. If there is any element of newness in them, it is in their application to the process of integrating the child's educational experiences.

CREATIVE SUPERVISION

In the introduction to "Supervision and the Creative Teacher," this statement is made: "1. Each individual must create, in order to make normal adjustments to the rapidly changing conditions in his social environment. 2. Real satisfactions are attained in the greatest amounts only by the individual who has solved his life problems through intelligent creative activity."¹ Supervision is essentially a creative enterprise. The process is indicated by the philosophy of

¹ Emma A. Neal, and others, *Supervision and the Creative Teacher*. Fifth Yearbook of the Department of Supervisors and Directors of Instruction, National Education Association, New York: Bureau of Publications, Teachers College, Columbia University, 1932, p. 9.

the new education itself. The Yearbook just mentioned makes this introductory statement in its chapter on principles of supervision for creative teaching: "Teachers are human beings. They are motivated by the same feelings and desires and ideals that motivate all normal persons. Emotionalized habits, fear, anger, security, social approval, and the urge for self-expression are as curiously interwoven in the fabric of their natures as they are in that of the writer and of the reader of this page." The special supervisors must proceed in their program with the appreciation that the development of teachers must precede the improvement of teaching. With the cooperation of all in the building of personalities, we will realize new and improved educational results.

SHOULD TEACHERS COLLEGES PREPARE FOR INSTRUCTIONAL PROCEDURES IN PRESENT USE IN ALL TYPES OF ELEMENTARY SCHOOLS?

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A PROBLEM

There is apparently considerable variety in the techniques of instruction used in California schools, certainly in the schools to which the Fresno State Teachers College sends its graduates. There are schools in certain cities that are using a Winnetka plan of instruction, in which the skill subjects are individualized, and the content and appreciation subjects are carried on by an activity procedure. In other schools a type of activity procedure is strictly adhered to. Many schools are still making use of formal class instruction in part or all of the work. Forms of ability grouping are very numerous. The contract plan and the Morrison plan are used to some extent, especially in the high schools. From certain cities, specific requests are received for teachers who are prepared in the activity technique; from certain towns and counties requests are received for students who are trained in techniques of individual instruction.

The differences in practice are paralleled by differences in educational philosophy. Activity work, individual instruction, and to some extent the other instructional procedures are vigorously defended by their advocates; and if need be, arguments and authorities are cited favorable to the preferred form of instruction. Advocates of certain procedures are warmly partisan, and the enthusiasm of many individuals for a particular kind of instruction seems to approximate that of a religious zealot.

The differences that exist in both educational practice and theory present a problem to those who are concerned with teacher training; and before attempting to formulate a policy in the field of teacher training it may be wise to pause for a moment to attempt an understanding of the prevailing differences. In the first place, is it possible that all teaching procedures are good? Can it be true that it makes very little difference whether one procedure or another is used in teaching; or that one procedure is well adapted to one group of pupils, and another procedure is equally well adapted to another group of pupils? The writer doubts this sincerely. He feels that learning is much the same for one large group of pupils as for another; and that arithmetic or geography is much the same wherever it is taught.

Certainly the differences in teaching procedures are not sufficiently accounted for by differences of learning in individuals and schools. He interprets the prevailing partialities for certain types of teaching procedures as due largely to adventitious causes. Three common causes are: the hangover of traditional forms of teaching, the reflection in teaching procedures of current fashions in teaching, and accidents of early professional contacts.

If it is granted that present practices in the organization of instruction are based, to only a limited extent, upon sound reasons, the second question arises, is the teaching profession prepared to resolve the differences by showing clearly and conclusively just what teaching procedures are the best, and when they should be used? I think the answer is negative. The issues involved are in part philosophical, and therefore irresolvable; and the sum of the factual evidence on teaching techniques available at the present time is inconclusive. The choice of teaching procedures rests largely upon personal opinion for some time to come. While anyone can convince himself that the plan of teaching which he favors is the best, there is no known way of convincing others of it. Others hold as tenaciously and as reasonably to their beliefs.

A POLICY

What shall be the policy of the teacher training institution in view of the wide-spread differences in teaching procedures; the inability of the profession to show what teaching procedure or teaching procedures are best by a reasonable show of facts; and the tenacity with which different persons hold to their convictions? One policy is that of partisanship. The teachers college can choose a particular kind of instructional procedure and vigorously champion that procedure. If the college favors activity instruction, for example, it bends all of its institutional resources to convincing its students of the superiority of activity, and trains them in doing it; and it sends out apostles of the activity program into the community and into the state. In doing this, the teachers college assumes a prophetic function, if not a dictatorial attitude, and unflinchingly points the way to the schoolmaster's heaven, if there is any. Such a policy makes for singleness of purpose and consistency of effort in an institution; and the institution not infrequently gains fame or notoriety. The zeal and concentration of effort upon a single kind of work occasionally results in original contributions to education. Possible weaknesses of the policy are the temptation to exaggerate the importance of the favored technique out of all proportion to its real merit; an uncompromising, closed-mind attitude; and failure to train its graduates for the practical demands which they have to face in the

field. The graduate is at a loss if he enters a school where a different technique is favored, or where a variety of techniques is required. Since there is little control over the placement of graduates, this is certain to happen in many cases.

A second possible policy is one of complete subservience to existing practices. The teachers college adopts a policy of safety and conservatism, and lets well enough alone. This policy rests fundamentally upon inertia, lack of vigorous leadership, or over-cautiousness. It refuses to meet the challenge and to share the hazards of a growing profession. Few would attempt to defend it.

A third policy is a combination of the first two. It does not isolate itself by a fanatical pursuit of a half-truth, nor does it yield spinelessly to the demands of present practices. It takes cognizance of the varieties of procedures in common use, assumes that these procedures have some inherent value in them, and sets about preparing students to carry on these procedures. In this respect it is sane and practical; it begins where the schools are, and where teachers must start in their professional work. It is not satisfied with present procedures as they are, necessarily. It attempts to discover the best ways of carrying on the prevailing practices in teaching, and to train its students in using the best ways. The best practices may or may not be in common use. To be concrete, if the procedure in question is simultaneous class instruction, the policy would be to train the student in carrying on the customary type of formal work; to show him its limitations, and to acquaint him with, and to some extent train him in, the useful modifications of class instruction, such as differentiated assignments and the Morrison plan. The policy is to train the student to do well what he is required to do.

In another respect, the college is ideal in its policy. It assumes the responsibility of acquainting itself with all kinds of teaching procedures and factual information bearing upon them. It works out an ideal plan of instructional organization, according to its best judgment. This plan may be quite different from the plan in common use. It makes its students familiar with this plan of instructional organization, and recommends it as a goal toward which the student may work, as opportunities arise. This part of the policy makes for growth and progress.

This third policy may be designated as the middle-of-the-road policy, the practical policy, or the scientific policy. The middle-of-the-road term is appropriate because it avoids the extremes of radicalism on the one hand, and of conservatism on the other. It is practical, in that it takes due consideration of the practices in the organization of instruction as they exist in public schools, and begins

where they are. It deserves the name of scientific in that it takes into consideration all types of instruction, attempts to evaluate them, and attempts to find the place for the use of each type by an impartial and unemotional investigation of all available facts.

A PLAN

To make the issue a little more concrete and pointed, a plan for the organization of instruction is presented. The plan is designed to square with the third policy outlined above; to fit conditions as they are; and to provide for steady, substantial progress. It takes recognition of the fact that we are in a transition stage in our educational development; that there are conservative schools in which comparatively antiquated techniques of teaching are used; and that there are other schools, with somewhat different ideas as to what progress is, who are using quite radical procedures. Clearly the plan of instructional organization must consist of a combination of teaching procedures rather than with one.

The plan includes training in four fundamental types of teaching techniques: simultaneous class instruction, group instruction, individual instruction, and activity instruction. Class instruction is the conservative brand of instruction formerly used for all types of school work from habit formation to problem solving. Its use marked a great stride in educational advance and social progress several centuries ago, but of course it has proved to be poorly adapted to certain kinds of work. There is still a place for it in school, however. In the first place, it is useful if not required in the primary grades where the pupils are too immature for complete self-direction. This is true of most phases of the work including reading, language, arithmetic, spelling, music, and physical education. In the second place, the class procedure is usable in the upper grades in the fields of nature study, social studies, rhythms, and certain kinds of appreciation in music, art, and literature. Certain psychologists point out, if there is not absolute unanimity of opinion, that thinking and feeling are done better in groups. The customary developmental and recitation types of class instruction have some uses that are still valid, but on the whole the new forms are preferable in certain grades. These include the contract or differentiated assignments plan and the Morrison plan.

Group instruction involves breaking up the class into homogeneous groups. Pupils needing the same instruction are brought together and taught simultaneously. The groups may be relatively permanent and fixed in their composition, lasting throughout a term; or they may be temporary, formed from day to day, or week to week, as pupils needing specific instruction in particular phases of

work are identified, and isolated for instruction. The value of permanent grouping is slight because of the nature of individual differences, and the practical difficulties of forming homogeneous groups. It has some place in primary reading. Temporary ability grouping, on the other hand, is an extremely valuable and flexible type of procedure. Instruction is restricted to those who need it; and instruction is assured for those who need it. It is economical of the time of the teacher, since a number of pupils can be taught at the same time. Temporary ability grouping is usable when the objectives of the work are specific; the needs are common to several members of the class; the problems are specific, complex skills; and the pupils are mature enough for some self-direction. It can be used to advantage in spelling, language, writing, reading, and arithmetic, above the third grade.

Individual instruction is one of the types of instruction that deviates markedly from traditional procedures. There are several type plans, including the Dalton plan and the Winnetka plan; but all of them exploit the individualization of work. In the Winnetka plan the work is divided into graded units or goals, a pretest is given to determine when study should begin; the pupils study separate assignments, of supposedly self-directive material, and with a minimum of teacher help; and the pupils progress at their own rate. The common forms of individualized techniques have some serious weaknesses, but on the whole they represent a distinctly new and valuable addition to our equipment of procedures in teaching. Individual instruction is not a technique that can be used in just any kind of work. The use of individual instruction depends upon the maturity of the pupils, and the nature of the subject matter. In general, individual instruction may be used when the objectives are specific and separable; the needs are individual in character; the problem is the acquisition of facts and skills; and the pupils have capacity for self-direction. It can be used to advantage in spelling, handwriting, reading, and arithmetic above the third grade.

Activity work is a second radical departure from traditional instructional techniques. The class is heterogeneous as in simultaneous class instruction, but the nature of the activity and the nature of the pupils' participation are quite different. Activity work involves a great deal of physical and manual activity; and the pupils share in purposing, planning, executing, and judging the work. The activity is promoted by the whole class working as a unit, but the work is commonly distributed among small groups and individuals for execution. This provides a large amount of individual work; work adapted to the peculiar interests, capacities, and needs of the pupils. Activity work, as strange as it may seem, makes a real and unique

contribution to the individualization of instruction. There are several forms of activity organization, including the complete activity organization of all work, the Winnetka two-way plan, the unified curriculum, and the subject organization. The activity plan is especially effective in the social studies. The social studies provide the large units of work with which much of the work in the other subjects is integrated.

In conclusion, the plan of instructional procedures outlined above provides for an equipment of techniques that is varied and complementary. It is varied to meet the different requirements of the different subjects; and it is varied to provide the different kinds of training, individual and social, needed by the individual.

A plan of instructional procedures, whether this plan or another plan, should be designed as a unit, composed of organically combined and functionally related parts. It should be the outcome of painstaking and mature study. It should be subjected to constant testing and revision, as new facts are brought to light and substantiated. It should grow progressively. It should be relatively stable, not radically revised nor discarded at the dictation of each passing fashion in education.

AN ANALYTICAL STUDY OF CERTAIN ASPECTS OF THE MULTIPLICATION PROCESS

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Multiplication is a shortened type of addition. The multiplication facts are merely statements of the sums when specific addends are repeated. The memorization of those sums constitutes a real source of difficulty in the process. Unless the primary facts are known, little can be accomplished with the other aspects of multiplication.

A second source of difficulty with multiplication is likewise additive in nature. It has to do with carrying when the product of multiplication in any column except the last is more than a one-digit number. This aspect of the multiplication process is the major concern of the writers of this article.

The facts which can possibly occur with carrying in multiplication are as definite and fixed as are the primary facts of the multiplication tables. There are exactly 219 of them. They are composed of 36 of the different products from the multiplication tables together with the numbers which can ever be carried to each of those products. The products and the numbers which can be carried to each are given in Table I.

Table I is read as follows: The products to which a carry is made are listed in the columns labeled "products." The numbers 1 to 8 inclusive which can be carried to any product are indicated by the length of the line opposite the given product. For example: every possible carry-integer will occur with the product, zero. With the product, 2, the only possible carry-integer is 1. With the product 3 the carry-integers 1 and 2 occur. The other items in the table are interpreted in the same manner.

The facts given in Table I are very important for teachers to put into the possession of their pupils before the children are asked to work multiplication examples which involve carrying. It is difficult for teachers to retain isolated facts with precision and with functional efficiency. Consequently, the derivation of the items given in Table I is presented for consideration. Meaningful associations with facts tends to make their retention more permanent and to facilitate their recall.

TABLE I

The Addition Facts which Can Occur with Carrying in Multiplication

Prod- ucts	Carried Number	Prod- ucts	Carried Number												
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
0		25						27							
2	1	28						30							
3	2	32						35							
4	3	36						40							
5	4	42						45							
6	5	48						49							
7	6	54						56							
8	7	63						64							
9	8	72						81							
10	4														
12	5														
14	6														
15	4														
16	7														
18															
20	4														
21	6														
24	7														

The example 5879 multiplied by 6 is used for illustrative purposes. If the solution of the example is accomplished by putting down in its proper position each separate partial product, the work will appear as shown.

The process can be shortened considerably if only the unit's digit of each partial product is recorded and the ten's digit is carried in mind and added to the subsequent partial product. That is the procedure as multiplication is commonly taught. In order to make the additions required in the carrying, the addition facts 42 plus 5, 48 plus 4, and 30 plus 5 will need to be known if the work is to progress smoothly and accurately.

The facts given in Table I are the facts which will occur in such settings as those given in the example discussed. The conditions of their occurrence determine the characteristics of the facts. The first addend in every such fact is the product of two primary digits. The second addend consists of some primary digit which can be carried to the product in question.

$$\begin{array}{r}
 5879 \\
 \times 6 \\
 \hline
 54 \\
 42 \\
 48 \\
 30 \\
 \hline
 35274
 \end{array}$$

The numbers which can be carried to any product are fixed. They can be determined in the following manner: Find the primary factors of the product. If more than one pair of primary factors is possible, choose the pair having the greatest difference between the factors. For example, 36 may be factored into 6×6 or 4×9 . For purposes of determining the largest possible carry to 36, choose the factors 4 and 9.

Place the smaller primary factor in the ten's position in a multiplicand. Use the larger as a multiplier. For the unit's digit in the multiplicand use the largest primary digit; viz., 9. The resulting example produces the maximum carry-integer which can ever occur with the product being considered. Any carry-integer which is less than the maximum will also occur.

With these two identifying characteristics; viz., (1) *the first addend is product of two primary digits, and* (2) *the second addend is smaller than the largest primary factor of the given product*, teachers can easily identify or reproduce all the facts contained in Table I. They should learn the identifying characteristics and make use of them in determining the facts rather than attempt to memorize the facts of the table or to depend upon having the table always available. Children do not need to know the characteristics or the derivation of the facts, however.

The carry-facts of multiplication are not of the same difficulty. Forty-four of them are primary addition facts. These include the products from 0 to 9 inclusive in Table I. Thirty-four are higher decade addition facts which belong to the second decade. They include the products 10 to 18 inclusive in the table. Sixty-one are higher decade additions which belong to the third and fourth decades. These 139 facts are relatively common in examples with column addition. On account of their occurrence in column examples they are somewhat familiar to the pupils.

The 80 facts given in Table I with addends which are products ranging from 40 to 81 inclusive are probably less familiar to the children. Consequently, those facts are potentially more likely to produce difficulty and error than are the facts with which the pupils are more familiar.

Another factor which differentiates the carry-facts into categories is that of the nature of the additive process involved. Some of the facts produce sums which are in a higher decade than that of the initial addend (bridging combinations). They are potentially more difficult than are the non-bridging facts. Products with large primary digits in the unit's positions are most frequently in the bridging class. For example, 49 (7×7) produces a bridging combination with any carry-integer.

Eighty of the 219 facts belong to the bridging type. Approximately one-third of them also belong to the group designated above as being less familiar to the pupils. The bridging facts and particularly those which belong to the less familiar group should be given special attention in preparing pupils for work with carrying in multiplication.

The importance of the carry facts in connection with the multiplication process may be judged by the following data. Twenty-five primary multiplication facts ranking among the most difficult were selected by the writers for use in making examples for a test. Twenty-four examples were constructed and arranged in three sets in such a manner that each of the 25 primary multiplication facts occurred in every possible position in some example. The multipliers consisted of one-digit numbers. The multiplicands contained five or six digits.

Thirty-three pupils in the low fifth grade were given the examples to solve. The first time the children took the tests they were asked to multiply by an "extended method," i. e., like the method shown previously in this article. The children had never multiplied in that manner previously. Consequently, some confusion was expected. However, the method failed to produce confusion. On the contrary, it stimulated the pupils to ask questions about the traditional multiplication process which they had formerly used.

Within less than a week the test was repeated. In the second testing the pupils were instructed to multiply as they had been accustomed to do, i. e., by means of the "carry method." The results of the two testings provide some interesting and suggestive comparisons.

There were 99 test papers for each testing. When the "extended method" was used, 42 of the papers contained no errors. Eight other papers contained no errors with the multiplication facts. Contrasted with that record is the fact that only nine papers without errors were secured when the "carry-method," the usual method, was used. Approximately five times as many correct papers were secured when carrying was avoided as when it was used.

The difficulty of the carry factor was studied in another manner. A special head-gear was devised by means of which the mouth-piece of a dictaphone could be kept constantly in the proper position for receiving a pupil's dictation. Students were asked to solve the examples on paper and to state orally just what they did as they pursued the solution. The written and oral records were both available for analysis.

A study of the statements recorded by the dictaphone revealed that the average portion of the time spent in working the examples which was utilized in getting the multiplication facts was approximately 28 per cent. In other words about 72 per cent of the time

was utilized for carrying. The records bring out clearly the amount of effort that is required to obtain the sums in the cases of the carry combinations. The carry-facts should be known as thoroughly as are the primary multiplication facts. They are equally as important for securing the correct answer to the examples and they occur almost as frequently in the average example as do the multiplication facts.

The preceding discussion considered the carry-facts and the carry-element in the multiplication process as factors of difficulty. It was shown that the facts are definite and that they vary in apparent difficulty. It was also shown that carrying adds perceptibly to the difficulty of the multiplication process. In addition to their inherent difficulty these factors are influenced by certain other conditions which commonly arise in a multiplication example. Evidence has been presented which seems to indicate that the position of a combination within an example influences the number of errors the combination is likely to produce. The assertion has been made that, in general, the farther to the left in an example a given combination occurs the greater is its potential ability to produce errors.

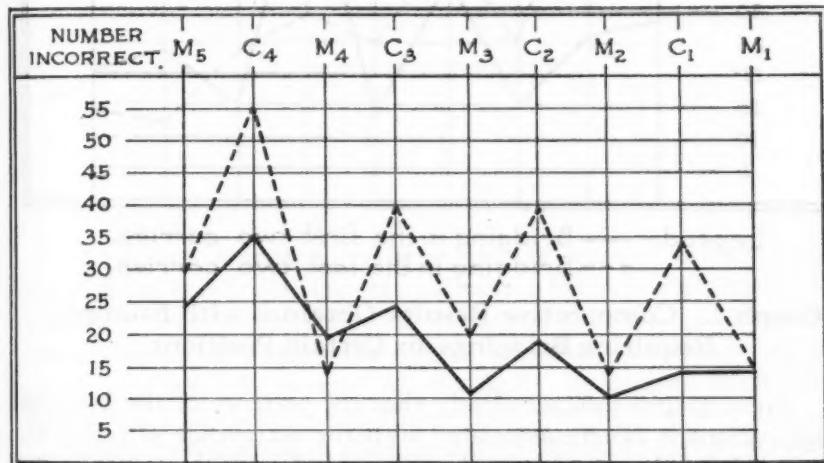
Evidence which supports that theory was obtained from a study of the papers of the 33 students when they worked the examples by means of the carry-method. Errors associated with the columns from right to left occurred in about the following proportions: 7 per cent of the errors occurred in the right-hand column; approximately 16 per cent, 18 per cent, 21 per cent, 22 per cent and 12 per cent respectively occurred in the columns to the left. Nearly one-half of the examples did not have a sixth column. Consequently, the low percentage (12 per cent) reported for the extreme left-hand column is not inconsistent with the general tendency for the errors to occur more frequently toward the left.

Inasmuch as approximately the same multiplication combinations occurred in every column the increase of error as the work progressed toward the left cannot be explained as a result of a change in the inherent difficulty of the multiplication facts. A tentative explanation of the phenomenon has been offered. It has been suggested that the disability which produces such results is one of lapses of attention rather than faulty reactions to specific combinations. The theory is that, other things being roughly equal, the farther to the left the work with an example proceeds the greater is the strain on the student's ability to concentrate his attention and consequently the greater is the possibility for his making errors.

The existence in significant amounts of different types of errors gives some substantiation for the idea that more than a temporary lapse of ability is involved. The very nature of the multiplication process would tend to make most probable an excess of errors to the

left of the middle vertical axis of the solution. An error made in any column cannot affect the column to the right but it has strong possibilities of making the answers wrong in the column to left. The slight increases in the percentages of the errors located in the columns toward the left in the data reported above might be attributed to the cumulative effort of right-hand errors just as reasonably as they are attributed to temporary lapses of attention.

What characteristics of a multiplication example possess strong potentialities for the production of errors? This question was investigated by the writers. It was stated previously that bridging combinations among the carry-facts are in general more difficult than are non-bridging combinations. In order to secure data regarding that point, two sets of examples were constructed for tests. Both sets contained the same multiplication facts. In one set every carry belonged to the bridging type. In the other set no carry involved an addition of the bridging. Illustrative examples are: (1) bridging type, 3876 x 8, (2) non-bridging type, 73486 x 8. The results obtained from the administration of these examples are reported in Graph 1.

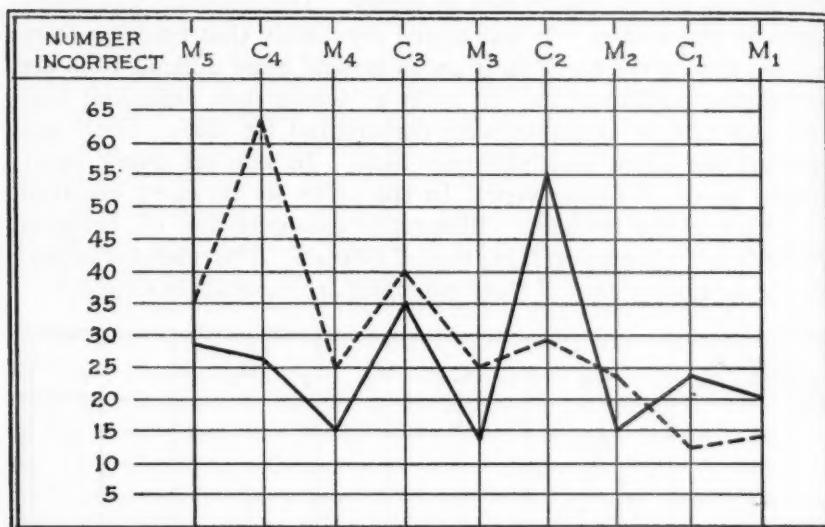


Legend:— Non-bridging type, --- Bridging type.

Graph 1. Comparative Results Obtained from Examples which Do and Do not Require Bridging

The graphs of both types of examples show a decided tendency to rise as they proceed toward the left. The carries which involve bridging produced in every instance considerably more errors than did the non-bridging carries. Differences in the number of errors due to multiplication were generally slight as compared with the differences in connection with the carry element.

The relative ability of the carry facts for the production of error was investigated in another manner. Two sets of examples involving with a single exception the same multiplication facts were devised. Every example contained four places in which carrying was necessary. In one set the two right-hand carries were of the bridging type. In the other set the two left-hand carries were bridgings. The results obtained from the administration of those examples are reported in Graph 2.



Legend:- — Bridging in the first two carries.
--- Bridging in the last two carries.

Graph 2. Comparative Results Obtained with Examples Requiring Bridgings in Certain Positions

These graphs indicate clearly that the presence of the bridging combinations is closely associated with the occurrence of mistakes. The graph for the mistakes made with examples which require bridging in the two right-hand positions does not correspond with the idea that difficulty increases as the work progresses from the right to the left. In both graphs the second of the two bridging combinations appears to produce the greater number of incorrect responses.

Many mistakes with carrying are made because the person working an example carries some number other than the one which should have been carried. His knowledge of and work with the multiplication facts may have been correct, but some mental factor influenced his performance with carrying and caused a mistake to be made.

Some of the possible conditions which might conceivably produce such an influence were examined and studied to determine their effect.

A set of examples was constructed containing five digits in the multiplicands and one in the multipliers. None of the carry-facts produced were of the bridging type. One interval in each example did not involve carrying, i. e., the carry-integer was zero. The problem under investigation was to determine whether the no-carry interval produced proportionately more or less mistakes than were produced by the carry intervals.

Three examples of each of the four possible types were constructed. In type 1 the no-carry interval was the first on the right. In type 2 it occurred in the second interval. In type 3 and type 4 it was the third and fourth intervals respectively. The results obtained are reported in Table II.

Table II

Frequency of Mistakes Recorded for Intervals Involving
Carrying and No Carrying

Type	C ₄	C ₃	C ₂	C ₁
1	49	30	15	4
2	30	8	8	18
3	30	8	18	17
4	10	7	28	13

NOTE:—The bold-face item is the no-carry record in each case.

There is a tendency for the number of mistakes in the no-carry intervals to increase as the interval moves from the right to the left. However, there seems to be no indication that the occurrence of a no-carry interval along with intervals which involve carrying produces any unusual amount of mistakes. In general, these pupils appear to be less bothered by the no-carry than by the carry intervals.

A study was made of the influence of different types of sequences with the carried numbers. Three examples of four types of sequences were constructed. The examples of type 1 contained no repeated carries. The sequence of carried numbers in the first example was 1, 2, 3, 4. In the second example that sequence was reversed; viz., 4, 3, 2, 1. In the third example the serial sequence was broken up as follows: 2, 4, 1, 3.

The results obtained from the examples of type 1 appear to indicate that the size of the carried number is a greater factor in causing mistakes than is any of the sequences used in the example. Mistakes tend to pile-up on the left with example one. They remain about

equal in all intervals in example 2. They fluctuate in example 3 according to the position of the larger carry-number.

Other types of sequences made up by means of repetitions of certain carried numbers were constructed in examples and tried out. Results obtained from their administration indicate that the repetition of a carry-number produces a strong tendency to make an error by repeating the same carried number in the next interval after the series changes.

CONCLUSIONS

These observations give considerable justification for doubting the soundness of the theory that multiplication disabilities are caused mainly by temporary lapses of ability rather than by certain factors which are inherent in the structure of the examples. Fluctuations of attention undoubtedly exist and they unquestionably are a factor in the occurrence of mistakes but at the present time it would appear that considerable value will be derived from the investigation of other factors of the process which are more amenable to remedial treatment.

The data reported in this discussion are not presented as final. A great deal more research needs to be done and the techniques for determining the influences of these and other factors of the process need to be more carefully worked out. These data do justify, however, the calling of the attention of teachers to the following elements of the multiplication process which are fruitful primary sources of difficulty: (1) the primary multiplication facts, (2) carrying, (a) lack of mastery of the addition facts needed in carrying, (b) influence of bridging combinations in the additions arising from carrying, (c) the size of the carried number, (d) the nature of the sequences which arise in successive carryings. Other aspects of the process are also potentially difficult but the studies reported herein were not concerned with them.

AN EVALUATION OF SUBTRACTION EXAMPLES

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This evaluation is concerned with the extent to which subtraction examples in the newly adopted California State Series arithmetic textbook for the fourth grade¹ prepare pupils to perform the subtraction operation as it will occur in long division. It should be noted that the newly adopted textbooks do not offer long division in the fourth grade, as was the case in the old series. Long division is presented approximately one year later than it was before this adoption.

Presumably the delay in the presentation of the long division operation was caused to some extent by the knowledge that this operation has inherent qualities which make it difficult.

All difficulties in long division are not attributable to the difficulties of the division aspects of the process. A large percentage of pupil-errors in long division is due to a lack of control of certain facts and skills in the supplementary processes of subtraction and multiplication. Mastery of the facts and skills of multiplication and subtraction incident to the solution of long division examples would appear to be prerequisite to success in long division performance.

The purpose of this study is to determine the extent to which the textbook presents materials and practice leading to the mastery of the subtraction facts and skills used in long division.

There are 44,550 possible minuend-subtrahend combinations that will occur in long division examples which involve one-digit or two-digit divisors. The various combinations differ in the nature of their inherent difficulties. They may be classified into categories based upon the presence or absence of the sources of difficulty in the subtraction process. These difficulties are bridging, zero combinations, and unseen numbers.

The presence or absence of these difficulties in various positions in the examples constitutes the criterion for differentiating the categories. Twenty such categories have been identified and their distinctive features described² as follows:

Type—	Description of the Categories
1.	No bridging and no zero difficulties.
2.	No bridging. Any number minus zero.
3.	No bridging. Any number minus itself, including 0-0.

¹ Leo J. Brueckner, and Others, *The Triangle Arithmetic, Grade Four*. Sacramento: California State Printing Office, 1932.

² Peter L. Spencer, *Supervisory Bulletin No. 1*, Pomona City Schools, 1932.

4. No bridging. Any number minus itself in the unit's column and a number minus zero in the ten's column.
5. Bridging in the unit's column only. No zero difficulty.
6. Bridging in the unit's column only. Number minus zero in the ten's column.
7. Bridging in the unit's column only. Minuend ends with zero.
8. Bridging in the unit's column only. Minuend ends with zero and in ten's column a number minus zero.
9. Bridging in the unit's column only. Seen zero in the ten's column of the minuend only.
10. Bridging in the unit's column only. Seen zero in both unit's and ten's columns of the minuend.
11. Bridging in the ten's column only. No zero difficulty.
12. Bridging in the ten's column only. Seen zero in the ten's column of the minuend only.
13. Bridging in the ten's column only. Seen zero in ten's column and zero in unit's column of remainder.
14. Bridging in the ten's column only. Zero in the unit's column of the remainder only.
15. Bridging in the ten's column only. Zero at the end of the subtrahend.
16. Bridging in the ten's column only. Zero at the end of the subtrahend and a zero in the ten's column of the minuend.
17. Bridging in both the unit's and ten's columns. No zero difficulty.
18. Bridging in both the unit's and ten's columns. Zero in the unit's column of the minuend only.
19. Bridging in both the unit's and ten's columns. Unseen zero in the ten's column of the minuend only.
20. Bridging in both the unit's and ten's columns. Unseen zero in the ten's and seen zero in the unit's columns of the minuend.

An analysis of the fourth grade textbook of the California State Series was undertaken to determine whether the subtraction examples included therein were in their nature calculated to develop proficiency with these types of cases. In order to qualify for tabulation in any one of these 20 categories, subtraction examples must have one-digit, two-digit, or three-digit subtrahends capable of being produced by one-digit or two-digit divisors. The difference between the minuend and the subtrahend in the subtraction examples with one-digit or two-digit subtrahends must be less than the subtrahend. The difference between the minuend and the subtrahend in the subtraction examples with three-digit subtrahends must be less than the greatest factor of the subtrahend. Only those subtraction examples that could occur in long division having not more than two digits in the divisor are included in this analysis. Verbal problems were not considered in making this analysis. In making the analysis, the book was divided into tenths or approximately twenty-six pages each.

The results of the analysis are shown in Table I. The type of subtraction example as designated in the preceding tabulation is shown in the column at the extreme left. Following is shown the frequency of each type in each tenth of the book and in the entire

book. The section of the table at the right shows the percentage of incorrect answers obtained to each type of subtraction example by the high and low division of fourth and fifth grade classes in a representative school.

TABLE I

Number of Subtraction Problems in Fourth Grade Arithmetic Textbook, by Type, and Percentage of Incorrect Answers Obtained to Each Type

Type example	Number of examples of each type in each tenth of book											Percentages of incorrect answers obtained for each type in a representative school			
	1	2	3	4	5	6	7	8	9	10	Total	Low 4	High 4	Low 5	High 5
1.....	5	0	2	0	1	4	21	13	0	1	47	12.5	10.8	6.3	4.7
2.....	0	0	1	0	2	0	0	3	0	0	6	20.5	14.7	11.7	2.8
3.....	1	0	2	0	0	0	0	1	0	0	4	12.9	11.6	7.0	5.1
4.....	0	0	0	0	0	0	0	0	0	0	0	24.6	18.1	10.4	5.9
5.....	3	0	8	0	2	18	26	32	1	0	90	52.3	29.8	23.7	16.4
6.....	0	0	0	0	0	0	0	0	0	0	0	53.1	32.8	23.9	15.6
7.....	2	0	0	0	0	1	7	3	0	0	13	50.8	28.0	23.4	12.1
8.....	0	0	0	0	0	0	0	0	0	0	0	54.2	25.5	23.4	11.7
9.....	0	0	0	0	0	0	0	2	0	0	2	66.3	43.6	36.5	32.4
10.....	2	0	0	0	0	0	0	0	1	0	3	61.8	38.0	37.5	29.3
11.....	1	0	6	0	1	1	0	4	1	1	15	38.9	23.7	18.2	17.3
12.....	0	0	1	0	0	0	0	0	0	0	1	51.2	24.6	20.8	10.2
13.....	0	0	0	0	0	0	0	0	0	0	0	52.0	23.7	23.6	11.6
14.....	1	1	0	0	0	0	0	0	0	0	2	50.0	19.0	15.9	10.6
15.....	1	3	0	0	0	1	0	0	0	0	5	51.9	22.0	17.4	11.7
16.....	0	0	0	0	0	0	0	0	0	0	0	Not determined			
17.....	0	1	1	0	0	0	0	0	0	0	2	58.8	29.0	27.1	20.8
18.....	0	0	0	0	0	0	0	0	0	0	0	57.2	33.7	26.8	19.5
19.....	1	1	0	0	0	0	0	1	0	0	3	65.5	35.4	29.4	18.4
20.....	0	0	0	0	0	0	0	0	0	0	0	60.6	33.2	31.5	24.3
Total.....	17	6	21	0	6	25	54	59	3	2	193				
Total subtraction examples in book.....	138	79	105	15	36	187	54	126	51	42	833				

An examination of Table I reveals some very interesting facts. The table shows that the book affords no opportunity for practice in seven of the 20 subtraction types. There is a frequency of 47 cases with type number 1, which constitutes 24 per cent of the entire exposure with subtraction examples that can occur in long division. This type of example produces a very small per cent of incorrect answers, as is also shown by the table. With four of the twenty types; namely, types 1, 5, 7 and 11, are found 165 examples, or 85 per

cent of the total number of long division subtraction examples found. On page 168 of the book is an exercise with this heading, "Subtraction Used in Division." Following this caption, one would naturally expect the authors to present sets of examples in which a deliberate and studied attempt had been made to present all of the difficulties involved in subtraction as used in the process of division. However, we find that of the 54 examples in the two sets on page 168, all 54 fall into three categories; namely, types 1, 5 and 7. Since recognition of subtraction as a factor in long division is indicated by the caption of these exercises, it would seem that the authors might very well have utilized a greater variety of the types of subtraction examples which occur in long division.

For the sake of illustration, 90 examples in Table I belong to type 5. The profile of difficulty of type 6 as shown by the table is not significantly different from that of type 5, but type 6 is not represented by a single example. To illustrate further, 15 examples in the table occur with type 11. Type 10 shows a consistently greater per cent of incorrect answers than type 11, but type 10 is represented in the table by only three examples. Thirteen examples in the table belong to type 7. The profile of difficulty of type 8 is not significantly different from that of type 7, but type 8 is not represented by a single example.

Only 193 of the 833 subtraction examples, or approximately 23 per cent of all the subtraction examples presented, are subtraction examples which can occur in long division having not more than two digits in the divisor.

It is evident that little attention has been given to the problem of supplying examples which are designed to prepare pupils to perform the subtraction used in long division. Pupils using the California State Series arithmetic text for grade four without supplementary sets of subtraction examples are likely to be poorly equipped to deal with the subtraction situations that they meet in the division process. The propaedeutic function in the preparation of the subtraction material was not given sufficient consideration. It will probably be necessary to use a large number of sets of supplementary examples affording practice in the 20 subtraction types, if considerable difficulty in the subtraction occurring in long division is to be avoided.

INDIVIDUALIZING INSTRUCTION IN SPELLING

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For more than 15 years some of our leaders in educational thought have been urging the necessity for developing more effective means of reaching the individual child in the group teaching of subject matter. Every classroom test, whether standardized or informal, adds further evidence of the need. It is the same story whether it is reading, arithmetic, or spelling. No matter what the class or grade, whether it is a slow group or a fast group, there is a vast difference between the individual members in relation to any given ability.

Despite the vigor with which educational leaders have urged the necessity for reforming classroom practices, and regardless of the startling individual variations reflected in every test of pupil achievement, so strong has been the influence of habit and classroom tradition on teachers that old ineffective procedures of mass teaching have persisted. Not only have teachers been slow to respond to the need for new methods of teaching, but principals and superintendents have been slow to recognize the need of providing teachers with books, supplies, and a type of class organization which would render effective the efforts of the teacher to reach the individual child. Fortunately, a large number of teachers is acquiring mastery of more effective techniques and there is a steadily increasing supply of books and materials suitable for effective work in individualizing instruction.

The purpose of this article is to set forth as concretely as possible in brief form the manner in which the Sacramento schools are carrying out individualized instruction in spelling. This subject is selected because it exemplifies to a marked degree the wide variation of individual abilities in any class group; it lends itself easily to complete individualization; it is one subject in which our schools have perhaps made the most extensive and substantial progress in developing effective techniques and materials for individualizing instruction.

Need for Individualizing Instruction in Spelling

Many studies show convincingly the wide range in spelling ability within a given class. Children of a given grade or age vary markedly in their spelling ability. This applies both to their ability to learn to spell new words and to the number of words they have learned to spell incidentally through reading, language, and other activities. Table I shows the wide range of spelling ability in a typical fifth grade class of 38 pupils. At the beginning of the term the entire

list of words for the semester (320 words) was dictated to the class. It will be noted that no child missed all of the words. The median for the class was 110 words missed.

TABLE I
Distribution of Fifth Grade Spelling Errors in Unstudied Words

Words misspelled	Frequency
0- 19.....	1
20- 39.....	0
40- 59.....	9
60- 79.....	3
80- 99.....	4
100-119.....	3
120-139.....	5
140-159.....	5
160-179.....	3
180-199.....	1
200-219.....	1
220-239.....	1
240-259.....	1
260-279.....	1
280-299.....	-
300-320.....	-
Total.....	38
Median.....	110

It would appear evident that any method of teaching spelling to this class should take into account the obvious difference in spelling ability of the various children represented. Ten of the children missed less than 60 words. It would seem a futile waste of time to keep these ten children engaged for the entire semester on the entire word list in order to learn to spell these words. Even the commonly used test-study-test plan of dictating a given number of spelling words each week throughout the year, which provides for some degree of individual work, would waste many hours for these children.

The Sacramento Individual Spelling Plan

The *Sacramento Pupil's Individual Spelling Book* was developed as a part of the program of curriculum revision with a view to meeting the need for individualized spelling. The book contains a carefully selected word list, a minimum list of words for retarded groups, exercises for training in the use of the dictionary and self-administering tests and exercises for the most frequently misspelled words. It is arranged to provide work for a full year of instruction in grades three through six.

Two pages from the sixth grade book are shown to give a clear picture of the arrangement of words, the plan for designating the words selected as minimum essentials, the provision for recording errors in spelling, and the plan for related word drill.

The children worked hard in **preparation** for the **entertainment** as admission was to be charged. We may gain much knowledge by reading a good **magazine**. Instruction in some classes is aided by the use of magazines.

The ninth problem was easy, but the **fortieth** one was difficult. He forgot that to **decrease** a quantity means to make it smaller.

Some more school words.

forenoon	allow	effort	advice	graduate	student	spirit	progress	primary	publish
commence	contrary	forgotten	companion	entertainment	knowledge	instruction	preparation	magazine	admission

Fill in blanks from the list of words above.

1. The price of _____ was 10c.
2. The teacher and her class are working hard in _____ for their Christmas.
3. The National Geographic is a _____.
4. Our teacher has a great store of _____ about China.
5. Mrs. Lindbergh received _____ in flying from her husband.
6. He drank a great _____ of water.
7. Many people _____ by eating less food.
8. The _____ problem was too hard for the _____ grade.

Total number of words misspelled-----

--	--	--

Teaching Spelling by the Individual Method

There are several effective ways of carrying on individual instruction in spelling. These differ somewhat in detail but are alike in all essential respects. For the most effective carrying out of the plan it is desirable to have some type of pupil's individual work book. There are a number of such books¹ now appearing on the market. It is possible, however, to adapt the ordinary spelling book, such as the California State Series, *Speller for Elementary Schools*,² quite effectively to individual instruction.³ The following is a description of the general procedure which we have found effective in teaching spelling with the use of the Pupil's Individual Spelling Book.

1. As the first step the teacher dictates all of the words for the semester at the beginning of the term and checks with blue pencil in each pupil's book the words he missed. This dictation is given before the children have had any opportunity to study the words for mastery and requires approximately 8 spelling periods with 40 to 50 words dictated at a time.

2. It will be noted from the sample page of the speller that three blanks are provided after each word. These are used by the teacher for checking the misspelled words after each dictation. This provides each child with an individual list of the words he is unable to spell and forms the basis for his daily study of spelling.

3. Not only is each child provided with his own list of words but children are taught a definite and effective procedure to follow in learning how to spell Words. The plan recommended in the *Sacramento Pupil's Individual Spelling Book* is not original. It follows the recommendations as to spelling method now accepted by most spelling authorities and used in many spelling tests. These procedures have, however, been rewritten in the language of the child so that they are easily understood and followed. The six essential steps in this procedure are as follows:

- (1) A child should be sure he knows the meaning and use of the word.
- (2) He must be sure he can pronounce the word.
- (3) He breaks the word up into syllables.
- (4) He tries to get a picture of the word as a whole fixed in his mind.
- (5) He writes the word as he pronounces it softly to himself.
- (6) He checks the results by comparing with the book.

¹ Carleton Washburne, *Individual Speller*. Yonkers-on-Hudson, New York: World Book Company, 1924.

² John C. Almack and Elmer H. Staffelbach, *The Stanford Speller*. Chicago: Laidlaw Brothers, Inc., 1932.

³ Grace M. Fernald, *Speller for Elementary Schools*. Book I, II. Sacramento, California: State Printing Office, 1916.

⁴ Ray B. Dean, *Adapting the Speller to Individual Differences*, *Sierra Educational News*, No. 99 (February, 1933) p. 42.

⁵ E. P. O'Reilly, *An Individual Method of Teaching Spelling*, *Fourth Yearbook, California Elementary School Principals Association*, Vol. IV (May, 1922) p. 65.

This procedure is set up for the child in more detail than here given and he follows the same procedure with each word he has missed until he has mastered it.

4. After the words have been dictated and checked in the books at the beginning of the semester, the children who missed relatively few words proceed independently to master the words they misspelled. In normal classes, this would amount to about one-half the class. The other pupils proceed under the guidance of the teacher to learn to spell words which caused the majority of the children some trouble. The same steps in procedure followed by individual pupils in learning words, is used by the teacher in teaching words to the group. As individuals improve and proper study habits become fixed, children may be eliminated from the group of poor spellers, to join the pupils who are working independently. In very poor classes most of the children may need to work as a group for a part of the term. However, even in poor classes there are some children who can soon be permitted to work alone or in pairs.

5. Children are tested on the entire list of words again about mid-term and finally near the close of the semester. This is in order to insure complete learning and to avoid the danger of assuming that a child who has spelled a word once correctly has mastered it.

6. After the re-test of all the words at mid-term, the teacher proceeds as before. In addition, a weekly check-up of words commonly misspelled on both dictations is given. This directs the attention of the child to the words needing additional study.

7. The words missed on the final dictation are copied on a ruled page provided in each book and transferred to the pupil's book for the next term for continued study.

Minimum List for Slow Sections

The words on each page printed in black face type represent a minimum list. It is suggested that only these words be dictated to the entire class. After these are mastered the class may proceed with the other words.

The teacher having a class of children below normal in their ability to learn may need to reduce this list further to suit the needs of his class.

Provisions for Review

One feature of the individual plan of spelling is the provision of an effective plan for review. The pupils' own books showing words missed form the best possible basis for selecting words needing careful study and review. The list of words suited to each child's

individual needs is provided after each dictation has been completed and the misspelled words are checked in his book. By making a frequency distribution of the number of times each word was misspelled the teacher has an excellent and reliable source from which to draw words for occasional check-up tests.

In addition to the review lists organized by the teacher for her own particular class, the pupil's spelling book provides special word study exercises for 20 per cent of the words for the semester. The words selected for special treatment are those which have been found as a matter of research to afford the greatest difficulty. As illustrated in the sample page given above from the *Individual Spelling Book*, these drills are provided for on every other page. They consist of dictionary drills, exercises for correct pronunciation, exercises in syllabification and a few common spelling rules. These exercises may be used as a review after the child has studied all the words he missed on the first dictation or they may be used as additional aids in learning the words as the pupil progresses from day to day.

Evaluation of Results from Individualized Instruction

Under the plan of instruction set up in Sacramento the end aimed at is the complete mastery of the word lists set up in the spelling books. A careful study of results in many of our schools has shown a gratifying degree of achievement toward this end. Table II, showing the results for one semester for five classes, grades 4, 5, and 6 at Sierra School, illustrates the effectiveness of the plan.

TABLE II

Spelling Results of Fourth, Fifth, and Sixth Grades at Beginning and End of Semester

Number of words misspelled	Number of pupils missing words at beginning of semester	Number of pupils missing words at end of semester
0- 9	1	100
10- 19	9	31
20- 29	9	12
30- 39	7	7
40- 49	14	7
50- 59	16	6
60- 69	6	2
70- 79	8	7
80- 89	8	1
90- 99	3	-
100-109	6	-
110-119	7	1
120-129	6	1
130-139	8	1
140-149	9	1
150-159	7	1
160-169	5	-
170-179	7	1
180-189	9	-
190-199	4	-
200-209	6	-
210-219	2	2
220-229	9	-
230 and up	17	-
Totals	183	181
Median	114	Less than 9

It should be noted from Table II that:

1. The number of pupils missing 9 or fewer words was increased from 1 at the beginning of the semester to 100 at the end of the semester.
2. The median number of words missed decreased from 114 at the beginning of the semester to less than 9 at the end of the semester. The median number of words missed at the end of the semester corresponded to 97 per cent correct.

One of the greatest values we have found in using individual methods in teaching spelling has been the time saved by children who could already spell most of the words or could learn to spell them very quickly. For several terms a careful account has been kept in some of the schools of the time saved during spelling periods. The results shown in Table III for a fourth grade class of 33 children, are typical of results in most classrooms.

TABLE III

Spelling Progress and Time Saved in Studying Spelling in Fourth Grade Class

Number of words misspelled	Number of pupils missing words at beginning of semester	Number of pupils missing words after 9 weeks' study	Number of pupils missing words at end of semester	Number of 20 minute periods saved by the children indicated in col. 1
0- 19.....	1	9	29	70
20- 39.....	6	7	2	179
40- 59.....	5	5	2	94
60- 79.....	2	2	-	30
80- 99.....	3	5	-	14
100-119.....	2	-	-	5
120-139.....	3	2	-	38
140-159.....	2	2	-	7
160-179.....	3	1	-	16
180-199.....	3	-	-	13
200-219.....	2	-	-	-
220-239.....	-	-	-	-
240-320.....	1	-	-	-
Totals.....	33	33	33	466
Median.....	90	40	13	

The following facts shown in Table III are of special significance:

1. The number of pupils missing fewer than 20 words increased from 1 at the beginning of the semester to 9 after nine weeks' study and to 29 at the end of the semester.
2. The pupil missing less than 20 words at the beginning of the semester saved 70 twenty-minute periods during the semester.
3. The six pupils who missed fewer than 40 words saved a total of 179 twenty-minute periods during the semester.
4. The entire class saved a total of 154 hours in time by use of the method of individualized instruction.

Summary

Principals may feel that the advantages of this method of teaching are not worth the necessary effort to overcome old method prejudices among teachers. While the individual plan does not lessen the work of the teacher, it does take away the drudgery because pupils are interested and progress is apparent. If the principal will help one or two progressive teachers to establish the individual plan, he will find the advantages will soon become known and other teachers will adopt it because it is not difficult to conduct, once it is understood, and it changes learning from a humdrum routine to a vitally interesting experience.

READING IN MODERN LIFE

ARTHUR S. GIST, *President, Humboldt State Teachers College*

Reading in modern life is so extensive and involved that we marvel at the steps taken since the time primitive man attempted to communicate with his neighbors. He at first made crude attempts at communication. These early attempts consisted of gestures and inarticulate speech. Through long ages he merely expressed his thoughts in grunts, groans and shouts to his neighbors. The next important step was the drawing of pictures to represent shelters, tools, food, friends, and enemies. In this pictograph method of expression, primitive man carved his crude thoughts into stone, wood, and later into clay which was baked for preservation. The next step was the combination of objects, a method used by the Egyptians and the Hellenic peoples. It was but a step then to the alphabet for which we are indebted to the Phoenicians who devised one of the first crude alphabets for use in their commercial pursuits. The Greeks used much of the Phoenician alphabet in their early classics. With the conquering of the Greeks by the Romans, the alphabet was widely spread among many of the civilized nations in early times. The spread of culture was then possible but it remained for the printing press to further disseminate literature and culture. The invention of the printing press, as crude as the early forms were, marks the beginning of the spread of culture and universal reading and communication.

READING IN ADULT LIFE

An appraisal of values and practices of reading in adult life serves as a good basis for many of our classroom aims. Why is reading important in adult life? How should these aims influence objectives and practices in the development of reading ability? In the first place we may state that reading in adult life is essential for vocational reasons. We need it in nearly every commercial, industrial, and professional pursuit. The business man must know how to read to conduct his business satisfactorily. The farmer must know how to read to understand any of the contributions of scientific farming, to read market reports (those not available to him over the radio) and to read general news items which may affect the production and marketing of his crops. The housewife must read to understand profitable buying for the home, to know modern appliances for the home, and to analyze present-day problems, that her influence over the children may take these problems into account.

The vocational aspect of reading, therefore, is an important element in our reading problem.

The enrichment of life is another aim in acquiring the ability to read. The best in life, in all ages, can be brought to us by means of the printed page. In fact, reading in adult life has been called "The University of Print." Adult education should continue throughout life and reading is one of the most effective means of continuing our interests and our development.

Another value of reading ability is to escape from ourselves, from our environment, from our worries and difficulties and to enter that realm of dreams, of ideals, of aspirations, and ambitions. We must philosophize about life to get a proper perspective of ourselves and of our problems. To the field of reading we go to secure our mental balance of conditions. We dream of ideal conditions, of Utopia where dreams and aspirations will be realized, where efficiency and human kindness will be properly intermingled and directed. Reading takes us into these ideal situations. It takes us away from our unsolved problems into stimulating reveries. We thus have definite purposes in reading. It touches our lives vitally in many respects.

EVIDENCES OF EXTENSIVE READING

Americans are extensive readers as evidenced by numerous studies and observations. This tendency to read widely is increasing rapidly. In 1870 the percentage of our population in the United States ten years of age and over who were illiterate was 21.9 while in 1930 it had dropped to 4.3 per cent. Universal reading and education are responsible for this improvement. In 1880, we published one issue of a magazine and a newspaper to every two and a half persons. In 1910 these publications increased to one issue to every person—an increase of 500 per cent in the number of issues, while the population was increasing but 100 per cent. In 1930 we find approximately $2\frac{1}{2}$ issues to every person in the United States.

Ninety-seven per cent of the adults in America say they read newspapers and 75 per cent claim to read magazines regularly.

A study made by the American Newspapers Publishers Association and reported in *The New York Times* shows the reading of representative business men. Nearly every man in the group studied reads newspapers for an average of 45 minutes daily. One-half of the group read slightly less than one book per month as an average. From these observations it would seem that Americans spend twice the amount of time on newspapers as upon magazines, and five or six times as much time upon newspapers as upon books. Commenting upon this situation *The New York Times* states, "This

would be the state of things so frequently deplored in the interests of our national culture. So much time devoted to the trivial and the ephemeral, so little time to the permanent and the significant! But the matter is not quite so dark. There are newspapers and newspapers, and there are books and books."

The extensive reading of magazines is shown by the number of subscriptions to certain journals. In 1927 we had seven magazines with monthly circulations of 2,000,000 each; 76 magazines with circulations of 1,000,000 each.

Another index to extensive reading is the number and use of libraries in the country. The number of borrowers' cards increased 27 per cent between 1923 and 1929. During the same period the number of books issued per capita increased 45 per cent. In a recent study of libraries in 33 cities representing one-tenth of our population it was found that the number of books borrowed increased 37 per cent from the close of 1929 to the close of 1932.

The number and size of libraries is also significant. Sixteen of the 48 states have one or more large libraries of more than 500,000 volumes. New York State has seven such libraries, and Illinois and California have four each. In 1923 we had one library to every 12,998 persons, while in 1929 we had one to every 11,255 persons. The establishment of branch libraries is also significant. California has 1732 such institutions, leading the other states. Many states organize county libraries, making books accessible to the remote sections. California again leads with 48 such libraries. Many of our libraries are of recent date. In 1896 Oklahoma had no libraries of more than 5000 volumes. In 1929 it had 61 libraries of more than 3000 volumes. Idaho had but one library of more than 5000 volumes in 1896. It now has 26.

READING IN THE SCHOOLS

The aims and practices in the teaching of reading in the schools are influenced by the importance of the activity in the school life of the child. One of the major aims in the teaching of reading is to develop the ability to interpret intelligently all reading material within the comprehension of the child. This ability contributes to intelligent thinking and enlightened citizenship in later life.

The worker who is untrained in analyzing social, economic, and religious problems may be befuddled and dazed by the daily press and the periodicals. As these problems are dry and uninteresting to him he may confine his reading to the sentimental, sensational material. On the other hand the trained thinker or social worker will find a mine of information in the daily press and in the periodicals. The school must train the pupils to analyze intelligently what they

read. It must do even more in stimulating an interest in these problems through reading. One test of an educated man is his ability to select and to analyze vital social problems. One test of the success of the school in the teaching of reading is the degree of ability developed to read thoughtfully. This ability has a direct bearing upon intelligent citizenship.

Another important element in teaching reading in the schools is to enrich the instruction by wider use of books and the ability and interest in using them. Dr. W. S. Gray in a recent article describes a visit to a modern public library. In a large display case in the corridor was seen a text book on United States history with the statement, "Twenty-five years ago history was taught with the use of a single text." In the center of this display case was a large map of the United States with ribbons leading to important historical events, with this caption, "The Making of Our Nation." To one side was the further statement, "Today the library enriches the study of history through the use of many books." In our equipment of interesting, helpful reading material we have text books, supplementary books, reference materials, attractive books of fiction, newspapers, and magazines. All of this material is now used by the skillful teacher whenever it is available.

An analysis of the time used in the teaching of reading shows still further the importance attached to reading in the schools. The following table taken from Dr. Ayer's study¹ shows the relative emphasis upon reading:

Average Time per Grade and Percentage of Time Devoted to Reading in 49 Cities Over 100,000 Population

Grade	Average number of minutes per grade	Percentage of total time in elementary school curriculum
I.....	84.2	32.6
II.....	80.8	28.6
III.....	66.4	22.2
IV.....	49.0	16.0
V.....	36.4	11.8
VI.....	28.2	9.2
VII.....	28.4	9.0
VIII.....	27.2	8.7

¹ F. C. Ayer, *Bulletin No. 1, 1924*, Department of Research, Seattle Public Schools, p. 9.

A study of the causes of failure in the elementary field shows a high percentage of the non-promotions attributed to unsatisfactory reading. The Cleveland Survey, made in 1915, shows the percentages of non-promotions by grades and by subjects. These are given in the following table:¹

Non-Promotion in the Cleveland (Ohio) Public Elementary Schools in 1915 (Cleveland Survey)

Grade	Percentage of failures from all causes	Percentage of failures caused by				
		Reading	Arithmetic	Language*	Geography	History
I	15.5	92				
II	12.3	64	22			
III	12.4	27	60	6		
IV	14.6	16	47	21	6	
V	17.8	8	42	20	23	
VI	17.2	5	35	25	27	
VII	17.0	3	29	29	12	27
VIII	9.8	3	28	33	10	23

* Beginning with Grade VI, language includes grammar.

Another study, made by Dr. Percival, reveals non-promotions attributed to reading as follows:

First grade	99 per cent
Second grade	90 per cent
Third grade	68 per cent
Fourth grade	56 per cent
Fifth grade	40 per cent
Sixth grade	33 per cent
Seventh and eighth grades	25 per cent

Modern Tendencies in Teaching Reading

A summary of the modern tendencies in the teaching of reading shows the influence of the school upon much of the outside reading.

1. Definite and comprehensive objectives now prevail in our reading program. We now attempt to cultivate interests in literary masterpieces, in worth while activities in life, and to enrich life itself through reading. The tendency, furthermore, is to allocate the reading objectives to the various levels of pupil-development and attainment. In this way we have definite purposes in our reading aims for each stage of pupil-development.

2. Another noteworthy tendency is the scientific aspect taken in planning and in evaluating our reading activities. One indication of this scientific tendency is the number of studies made in this field. Dr. Gray of the University of Chicago has prepared summaries² of the investigations in reading as they appear each year. According

¹Fowler D. Brooks, *The Applied Psychology of Reading*. New York: D. Appleton and Company, 1926, p. 6.

²Published in the *Elementary School Journal* during the first months of each calendar year.

to these investigations our first scientific study in the field of reading was conducted in this country in 1884. During the next 26 years only 34 new studies were conducted. From 1910 to 1924 we find rapid strides in the interest taken in scientific investigations. Four hundred studies, or an average of 28 a year, were conducted. These investigations in reading have continued since 1924 at the rate of 100 a year.

3. Another important tendency is to base many of our plans upon the child's interests and experiences. This does not imply waiting for interests to present themselves nor does it mean ignoring the child who displays no interest in the reading activities. It does mean, however, studying the background of experiences of the children and the interests which these experiences have aroused. The tendency is to base our plans upon these interesting experiences which the children are having each day.

4. Another tendency is to separate oral and silent reading in many of our aims and practices. The reasons for this separation are well outlined by Walker and Parkman¹ in the following summary:

Silent Reading

1. A comparatively simple process—comprehending the thought from the printed page.
2. Eye-movements.
Number per line—4 to 10.
Words seen with one fixation—.93 to 2.53.
3. Pauses—shorter and fewer than in oral reading.
4. Rate—can reach 400 or 500 words a minute.
5. Problem—an individual necessity.

Oral Reading

1. A complex process—comprehending the thought and communicating it through the voice.
2. Eye-movements.
Number per line—6 to 11.
Words seen with one fixation—.86 to 1.02.
3. Pauses—frequent and long enough for the reader to seize upon and interpret the idea through the voice.
4. Rate—cannot go faster than the voice, about 150 words a minute.
5. Problem—a social enterprise.

5. We also have as a modern tendency the partial separation of the two phases of silent reading—the recreatory and the work type. The aims, practices, and materials used are so wholly different that these two phases of silent reading must be taught separately in many of the grades.

Modern reading touches our lives vitally. It has a powerful influence upon American life, both in thought and in action. Few aims of the school are of more importance than that of developing reading habits and tastes which will direct our thinking, enlighten our citizenship, and provide wholesome interests during the ever-increasing leisure.

¹ Alberta Walker and Mary R. Parkman. *A Manual to Accompany the Study Readers*. New York: Charles E. Merrill Company, 1925, page 11.

THE ELEMENTARY PRINCIPAL AT WORK

An Excerpt from the Pages of the Life of One of Them

ROBERT B. ABBOTT, *Principal, Heaton, Lafayette, and Dailey Schools, Fresno, and President of the California Elementary School Principals Association*

THE SITUATION

The scene is laid in a California town of 65,000 people. Our hero is the principal of three elementary schools. The first is a large school of 560 pupils, with a kindergarten and grades one to six; and the other two are quite small, one a five-teacher and the other a three-teacher school. The largest of the three schools is located near a state teachers college and is used extensively for teacher training purposes. Four classes are taught by student teachers under two supervising teachers. Each supervising teacher has two classrooms and four or five student teachers. Practically all the remaining teachers have from one to three student teachers working under them. Altogether this principal supervises 21 regular teacher and 15 student teachers qualifying for elementary or primary certificates, and 10 qualifying for special music credentials.

To further explain the setting, there are 15 other elementary school principals in the town; one superintendent and an assistant superintendent in charge of secondary schools and of research; a half-time supervisor of reading in the primary grades; a fifth-time supervisor of kindergarten; and a full-time supervisor of art working in grades one to twelve. Professional and business meetings for elementary principals are held on alternate Friday mornings. A great deal of responsibility is given to each principal for organizing and conducting his own school.

BEFORE SCHOOL OPENED

Many duties faced the principal before school opened in September. He had taken courses at summer school, being wise enough to include one on "bowling on the green," a non-credit but profit sharing investment. He returned to the scene of his crimes and his accomplishments with a note book in which is an outline labeled IDEAS, of which over two hundred are neatly listed, but not catalogued. Half of these ideas will not work yet, but they may work sometime, and they represent goals for the future. They range from ideas of administration to ideas on teaching Johnny Adams to read.

After he obtained his keys and while sorting supplies, putting in teachers' boxes the materials they are sure to need on Monday when school opens, seeing that classroom doors are labeled and directions printed for registering children, even while answering parents' questions and planning with the president of the local parent-teacher association, while testing children whose promotions were dependent on summer school work, the principal mulled over in his mind his ideas for the school year, 1932-33. Occasionally he seated himself at the desk and put into writing some of these plans. Some of them called for discussion and acceptance on the part of his teachers because they were uncharted and called not for administration but rather for cooperative experimentation. These were labeled "tentative" and were outlined more definitely later by the group as a whole.

Others were plans that called for administrative decision on his part rather than leadership or experimentation. To this end he looked over his School Handbook, saw that the organization for such things as fire drills, passing of children, standing committees, and the like would be acceptable for the coming school year. To this must be added schedules for the new year, holidays, assemblies, yard duty, faculty parties, teachers' meetings, and report card dates.

Another important activity which needed to be arranged before school opened was the meeting with the student teachers having charge of the four classrooms and their two supervising teachers. This meeting was held on the Saturday before school opened and the principal's part was that of introducing the young people to the spirit, the activities, and the routine of the school. These student teachers needed to be exposed to as much of the practical work of the school as possible, and since they were to be members of the faculty for but one semester, their needs must be given as much thought and consideration as possible. For this purpose a handbook was prepared, stating objectives and directions relative to the school policies and procedures.

Still other plans called for the cooperation of the assistant principals in the two small schools. For the most part, these assistant principals realized that they must administer their schools according to their ideas while the supervising principal advised them. On the other hand, each one accepted the responsibility for the supervision of his own school. This plan of administration calling for the overseeing of three schools was confusing. Undoubtedly this plan challenged the principal in charge of the three schools, but he was puzzled about how he might give his assistant principals in the small schools real assistance and at the same time insure to his large school, for

which he was personally responsible, the continuous attention it should have, without pushing too much of the detail work onto the teachers. The real thing he was concerned about was that the *life of the school* should not suffer. His plans must, above all things, take care of that. Many hours of concentrated work were consumed by the making of plans for the new school year. This was a most important duty and one upon which the real success of the entire program of his three schools depended.

AFTER SCHOOL OPENED

The outline of the plans were completed by the principal before school opened. Copies were given each teacher and this served as the material for the first teachers' meeting, held at half past three on the opening day of school. This was experimental, since heretofore the principal had held the meeting on the Saturday preceding the opening of school. These plans formed the basis for the program for the year.

Reading was taken as the subject of major emphasis in the two smaller schools because the pupils of these schools, on the whole, were weak in this subject, as indicated by standardized tests and by teacher opinion. A special time allotment was made for these two schools which provided a very considerable increase of time on reading as a subject. The principal concentrated his classroom visits on reading and stressed it in his building meetings held on Tuesday and Thursday noons.

Social studies was taken as a subject for major emphasis for the large school and for minor emphasis in the other two schools. The principal was interested in having modern social problems included in the social studies work of the elementary school, at least to the extent that the child should realize that unsolved social problems face us and that a scientific attitude should be taken in finding or accepting solutions. Children need to get from social studies some major *understandings* of the world as it is and why it is thus, as well as ability to work with others, to lead, to follow, and to find information.

In addition, the principal, as a member of the social studies committee for the city, desired first hand information about the reaction of children to these problems. The method in social studies which the teachers were to use was one of approach through present day problems, bringing in the background and the history after getting a picture of the present. This was an attempt to make history, geography, and nature study serve to shed light on our present society and its problems.

The testing program suggested in the outline was largely of the survey type, by use of which the principal and superintendent might see, so far as tests could show it, the effect of the student teachers on the achievement of pupils and the value of having a supervising principal in the small schools.

The use of the Spencer diagnostic tests as an experiment was in line with the principal's desire to have objective, standardized tests that would serve to find pupil weaknesses. The teachers had been doing considerable informal testing of this type, but a standardized test should be more valuable. The principal found the tests to be very usable during the first few weeks of school in the fourth, fifth, and sixth grades. The teacher felt that a mistake was made in giving the entire test in two days, rather than giving one section, on addition, for example, and then marking, diagnosing, and doing the major part of the corrective work needed before proceeding to the section of subtraction. Pupils not in need of corrective work on a particular process according to test results were excused from arithmetic until the class took up another process.

REGISTRATION

Survey of Children

Registration of pupils was the activity of greatest prominence during the first two days. A continuous record card had been devised that suited the purposes. The principal decided the placement of children who transferred from other schools, while kindergarten and low first grade children coming to school for the first time entered at the respective classrooms. The principal's record system was of importance in this connection. Here was an opportunity to learn much about the child, since the parent usually accompanied him or her.

In the first, necessarily brief, conference with the parent, the principal was able to discover something of home conditions, such as whether both parents work, exact occupation of parents or guardians, whether both parents are living and if they live together, number and age of brothers and sisters, number of school transfers during school life, general success in school heretofore, and often particular problems are indicated which may be followed up later. The placement of children which was at all doubtful was so indicated by a check mark on the record card and these children were given individual attention within a week or two to see if the trial placement was correct. This was particularly important for late entrants who missed the beginning of the semester tests.

Grouping Pupils

The principal's next task was that of relieving overcrowded classrooms, which were sure to result after the first day's registration. He attempted to see that each teacher had approximately the same teaching load. This was possible in but a few rooms, so he attempted to make the groups as homogeneous as possible, that the teacher need not have any wider range of accomplishments and ability than necessary. The principal has been convinced that grouping on ability basis alone has more drawbacks than advantages, especially where intelligence tests were used as a basis of classification. On the other hand, if accomplishment was used, it was a very fair index of ability and a more practical one, since it placed properly those who had high native ability but had not yet learned to use it.

All known facts about each child were taken into consideration. Stanford Reading test results were used as a basis for grouping. At the same time the principal carried out the policy of the city administration by planning a six-year program for all elementary children. This meant that a very fast reader in the third grade who tests fifth grade ability in reading, for example, will not be put in the fifth grade in the group with children of like maturity, but will be given an enriched program. The child is accelerated only in case he is very mature or in case some other extenuating circumstances enter, such as the likelihood of a short school life or absence of a group of similar ability in the third grade, so that he is not being challenged, or in case the parents are so ambitious for rapid school progress that the child is made unhappy if retained in the third grade.

Under this policy of a six-year program for all elementary children, there will be some who should spend six and one-half years and an occasional child who should spend seven years in elementary school. The principal must be sure that the school meets their needs, too. Suppose such a child has reached the low third grade. His reading ability, at which the principal would look first, indicated inability to read with the low third group. This statement is not "inability to do third grade work," because there will be several children unable to measure up to this indefinite standard who should go ahead on the basis of a six-year program. If this child was immature or at least not *more* mature than the average third grade child, he would undoubtedly be better off in the high second grade, and the principal places him there.

Maturity is a very general term and needs definition. It is used advisedly here, however. Many principals use chronological age as a basis for promotion or non-promotion. The writer feels that this is a mistake in that they take chronological age and social age to be the same, when they are trying to classify children on the basis of

the social group with which they should work. Many children who are chronologically old for their grade are not socially or mentally old for the group. Some children, on the other extreme, are socially old, have had rich experience, rich home background, have self-confidence, interests beyond their chronological age; in short, are more mature than others of their age group. The term maturity should include all of this significant information, and each of the items mentioned should be taken into consideration separately.

The principal had organized his classes at the end of the previous semester in such a way that when one teacher was teaching high second and low third grades and a second teacher was teaching low third and high third grades, the former would have those low third pupils with less accomplishment, maturity, and ability than the group of low third graders taught by the second teacher. These should not be labeled *slow* and *fast* groups. They are slow and fast *moving* groups, and the justification for such grouping lies in the teaching methods used for each group. Slower moving children need greater repetition, more careful explanation, slow, steady rate of progress, more experience with the concrete and more guidance. It should be added here that in the high second and low third grade class, both groups will be slow moving groups. It had been the experience in this school that when the high second was a fast moving group and the low third was a slow moving group, they worked well together for a little while, but soon the low third had the unhappy experience of seeing the high second grade pupils do more difficult work than they could do.

Another word should be added. The principal's final philosophy of classification or placement of pupils was that each pupil should be placed where he could work best, so far as that was possible for the principal to arrange. This means that in regrettable instances where there was a clash of temperament between a teacher and a child, the child should be put into another section or even in another grade if it insured his happiness and feeling of security. It also means, as indicated above, that if there was no group in his grade in which the child could work with both a feeling of accomplishment and a feeling that the work challenged him, he should be regrouped or regraded. needless to say, regrouping goes on throughout the year. However, we felt from our experience that there were values in knowing and working with the same group and teacher for a considerable length of time.

CONFERENCES

A conference with each teacher about her individual plans, hopes, and aspirations came early in the semester. The principal made a schedule allowing for a thirty or forty-minute conference with each teacher and asked that she be prepared to talk over with him the projects and ideas she had in mind and the methods by which she proposed to carry them out. This conference plan, he believes, is of vital importance. It means that the teacher feels she has freedom to experiment; her enthusiasm and creative abilities are released; that the principal is working with her on her ideas, and in this way the principal is given an opportunity to discuss objectively and guide the creative work of the faculty.

This plan calling for discussion is much more valuable to the school than the principal's original practice of having written plans for the year given to him by the teachers. Its chief advantage lies in the fact that teachers' nebulous ideas may be more clearly defined, and ways and means devised for carrying them out. Otherwise, they "die aborting" or are unnecessarily stunted. A written record of teachers' plans for the semester may be obtained for making notes on those finally decided upon.

COMMITTEE WORK

Principal's Council

The Principal's Council is a type of committee, the purpose of which is to advise the principal in the administration of the largest school. Each year the teachers elect three of their members to serve on this council. These three serve to represent the teachers in such matters as the organization of teachers' meetings, yard duty, passing of pupils, lunch room organization, and whole school projects, such as Christmas programs or clean-up drives. The council meets every two weeks.

Pupil Committees

Pupil committees are formed to care for such things as decorating the auditorium, putting up a weekly art exhibit in the main corridor, observing the bicycle-on-the-schoolyard problem, school beautification or yard cleanliness, and corridor traffic. A pupil council tries to coordinate or legislate for all these activities.

Teacher Committees

Teacher committees plan the school's celebration of national holidays. Only a few holidays are celebrated by a whole school assembly each year. A separate committee is formed to plan for each holiday selected, and each in turn meets with the principal

to outline an assembly, the purpose of which is to develop in the children the appropriate appreciations.

Report Cards

One committee responsible for constructing a new report card submitted a plan whereby a mastery report card would show, for the tool subjects, the processes or steps or levels actually mastered or attained by each child. This was found to be difficult to carry out at the present time, though the reading levels as worked out in this city and the steps in arithmetic could be listed easily. The completed list was too cumbersome for a report to parents, and tended to overemphasize the tool subjects because of the space taken on the card. This mastery report card might well be used as a teacher's record card or a report to the principal.

The card which was evolved finally in experimental form included some interesting items such as *interest in current events* and *informational background*. These items on the card excited considerable favorable comment from parents. Listing five character traits, each followed by five descriptive words showing varying levels of attainment, served to set a more objective goal for upper grade children. One of the descriptive words was to be checked to indicate the general level of accomplishment of the child for that trait; for example:

v

In Cooperation: Irresponsible Careless Willing Careful Unsailing
It was necessary to talk over with the child these ratings that he might have specific instances in mind of the type of activity on his part that had earned him this rating. Such items as, "ability to express himself orally and in writing," tended to place the emphasis where it should be and showed parents the real objectives of elementary education. Music, art, literature, and nature study were rated in terms of the child's interest in and appreciation for these subjects. Outstanding skill or particular ability of the child was noted under *Comments*.

Lesson Plans

Another committee was trying out a new type of lesson outline for student teachers which was accompanied by a guide sheet to assist them in planning different types of lessons. (This committee will become more active at the end of the semester when the time comes to evaluate the results.) So far, the committee finds a need for a guide sheet in planning large units of work in the different subjects, and will probably also go forward with statements of methods for each subject that have proved satisfactory.

CONCLUSION

It is obvious that this brief description of the activities of an elementary principal is not all inclusive. Only a few have been considered here in detail. One activity of vital importance has been necessarily omitted, but should be noted; it concerns the principal's part in guiding the development of individual children. He must share this responsibility with his teachers to prevent and correct cases of maladjustment, if the school is to meet the needs of all children.

It is obvious that the writer is extremely fortunate in working with teachers who are highly professional in their point of view, have an attitude and habit of participation in all the activities of the school, and have a very high morale.

The superintendent's part in making the work of the elementary school principal stimulating and professional will readily be recognized as will also his professional attitude, his willingness to delegate authority, and his interest in "practical experimentation." Altogether the three prerequisites to satisfying work are present in the situation described herein, "positive ideals or goals, stimulating atmosphere, and congenial environment."

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